

#### **ABSTRACT**

A surface modification method for interlayer insulating films enables adhesion properties of an interlayer insulating film without changing the dielectric constant. An interlayer insulating film is formed on a semiconductor wafer by firing a coating film. The interlayer insulating film is formed of a coating solution including polysiloxane having an organic functional group. The surface of the interlayer insulating film is modified by heating the inside of the reaction tube, where the semiconductor wafer is housed, to a certain temperature while supplying a gas with oxidizing activity into the reaction tube. The gas with oxidizing activity is ozone, water vapor, oxygen or a mixed gas of hydrogen and oxygen.